

NGA (SEM. 2) REVIEW WORKSHEET

Simplify each sum or difference.

1. $6r^3 + 7r^3$

$13r^3$

2. $23u^2v - 19u^2v$

$4u^2v$

3. $(5g - 2g) + (2g^2 + 6g)$

$2g^2 + 9g$

Simplify each product.

4. $3x(x + 6)$

$3x^2 + 18x$

5. $-z^2(z - 9)$

$-z^3 + 9z^2$

6.

$2x(4x^2 - 7x + 6)$

$8x^3 - 14x^2 + 12x$

Simplify each product using the stated method.

7. $(x - 2)(3x - 4)$

$3x^2 - 4x - 6x + 8$

$3x^2 - 10x + 8$

8.

$(3x + 2)(x + 7)$

$3x^2 + 21x + 2x + 14$

$3x^2 + 23x + 14$

9.

$(4x - 1)(2x + 5)$

$$\begin{array}{r}
 4x - 1 \\
 2x \begin{array}{|c|c|} \hline 8x^2 & -2x \\ \hline \end{array} \\
 +5 \begin{array}{|c|c|} \hline +20x & -5 \\ \hline \end{array} \\
 \hline
 8x^2 + 18x - 5
 \end{array}$$

Simplify each product.

10. $(x + 6)^2$

$$\begin{array}{r}
 (x+6)(x+6) \\
 x^2 + 6x + 6x + 36 \\
 x^2 + 12x + 36
 \end{array}$$

11. $(2s + 7)^2$

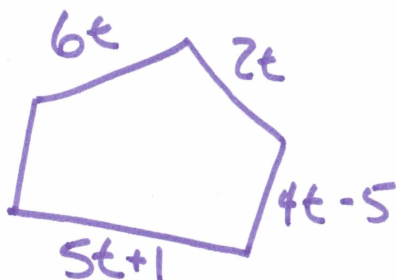
$$\begin{array}{r}
 2s \quad 2s + 7 \\
 2s \quad \begin{array}{|c|c|} \hline 4s^2 & +14s \\ \hline \end{array} \\
 +7 \quad \begin{array}{|c|c|} \hline +14s & +49 \\ \hline \end{array} \\
 \hline
 4s^2 + 28s + 49
 \end{array}$$

12.

$(3x - 8)^2$

$$\begin{array}{r}
 (3x-8)(3x-8) \\
 9x^2 - 24x - 24x + 64 \\
 9x^2 - 48x + 64
 \end{array}$$

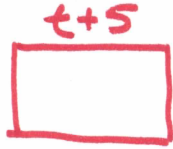
13. The perimeter of a pentagon is $20t + 7$. Four sides have the following lengths: $6t$, $2t$, $4t - 5$, and $5t + 1$. What is the length of the fifth side?



$$\begin{array}{r}
 4t - 5 \\
 5t + 1 \\
 6t \\
 2t \\
 \hline
 17t - 4
 \end{array}$$

$$\begin{array}{r}
 P = 20t + 7 \\
 - 17t - 4 \\
 \hline
 3t + 11
 \end{array}$$

14. The area of a rectangular field is given by the trinomial $t^2 - 4t - 45$. The length of the rectangle is $t + 5$. What is the expression for the width of the field?



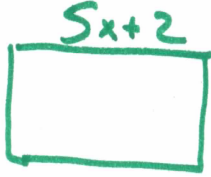
$$t^2 - 4t - 45$$

$$\frac{a = -45}{5, -9} \quad \frac{-4}{b}$$

$$(t+5)(t-9)$$

$$w = t - 9$$

15. The area of a rectangle is given by the trinomial $10x^2 - 31x - 14$. The length of the rectangle is $5x + 2$. What is the expression for the width of the rectangle?



$$a = 10 \cdot -14 = -140$$

$$\frac{-31}{b}$$

$$\begin{array}{r} 2 \quad -70 \\ 4 \quad -140 \end{array}$$

$$\begin{array}{r} 5x+2 \\ 2x \quad 10x^2+4x \\ -7 \quad -35x-14 \end{array}$$

$$(5x+2)(2x-7)$$

$$w = 2x - 7$$

16. The area of a square room is $16x^2 + 72x + 81$. What is the length of one side of the room?

$$16x^2 + 72x + 81 \quad (4x+9)(4x+9)$$

both terms must be the same

17. A rectangular prism has a volume of $4x^3 + 30x^2 + 36x$. What linear expressions can represent possible dimensions of the prism?



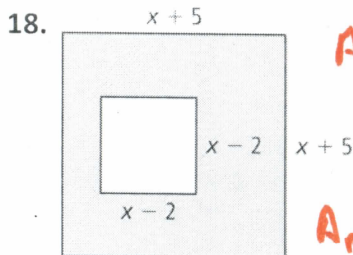
$$2x(2x^2 + 15x + 18)$$

$$2x(x+6)(2x+3)$$

$$\begin{array}{r} x+6 \\ 2x \quad 2x^2+12x \\ +3 \quad +3x+18 \end{array}$$

$$a = 36 \quad \frac{15}{3, 12}$$

Find an expression for the area of each shaded region.



$$A_{\text{BIG}} - A_{\text{SMALL}}$$

$$A_{\text{BIG}} = (x+5)(x+5)$$

$$A_{\text{SMALL}} = (x-2)(x-2) = x^2 + 5x + 5x + 25$$

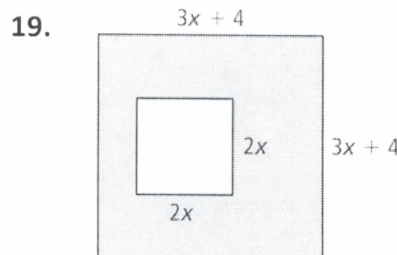
$$x^2 - 2x - 2x + 4$$

$$x^2 - 4x + 4$$

$$(x^2 + 10x + 25) - (x^2 - 4x + 4)$$

$$x^2 + 10x + 25 - x^2 + 4x - 4$$

$$6x + 21$$



$$A_{\text{BIG}} - A_{\text{SMALL}}$$

$$A_{\text{BIG}} = (3x+4)(3x+4)$$

$$9x^2 + 12x + 12x + 16$$

$$A_{\text{SMALL}} = (2x)(2x) = 4x^2$$

$$9x^2 + 24x + 16 - 4x^2$$

$$5x^2 + 24x + 16$$